

NASA SBIR/STTR Technologies
High Efficiency, High Output Plastic Melt Waste Compactor (HEHO-PMWC)



Phase 2

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Identification and Significance of Innovation

The primary innovations of the HEHO-PMWC are:

1. Design and material selection minimize thermal energy losses and operational time between processed batches
2. Square chamber design creates more useful 16" square tile byproducts for possible radiation shielding
3. Innovative pneumatic chamber actuating bellows reduces volume and mechanisms
4. Application of non-stick surface treatments to chamber and chamber door maximize accessibility and maintainability
5. Fully functional, stand-alone system



Technical Objectives and Work Plan

The Phase II effort built upon positive results of Phase I effort to fabricate and test a full-scale prototype HEHO-PMWC.

The following tasks were conducted to achieve the technical objectives:

1. Ersatz Investigation
2. Trash Collection and Containment Trade Study
3. Prototype Compactor Development
4. Prototype Design Options Trade Study
5. Prototype Subsystem Development
6. Prototype System Integration and Test
7. Prototype Chemical and Biological Evaluation
8. VOC Removal Investigation
9. Management and Reporting

NASA Applications

The HEHO-PMWC is a critical component for high volume reduction and water recovery for long-duration manned space exploration trash management.

Non-NASA Applications

The HEHO-PWMC will also play the same critical role for commercial aerospace companies with all the same benefits. Additionally, the square tiles could be easily used for radiation protection inside inflatable habitats.

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NON-PROPRIETARY DATA